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(54) **Improvements in or relating to cold cabinets**

(57) A cold cabinet (10) which has separate freezer and refrigerator (11) compartments, includes an additional compartment (13) adjacent to the freezer compartment and separated therefrom by a partition member (24). The member (24) is of thermally insulating material and includes an array of holes H, with a hit-and-miss baffle plate (25) supported beneath the member (24). By adjusting the baffle plate (25) the temperature of the additional compartment (13) may be varied between tempertures greater than or less than that of the refrigerator compartment (11). The partition member (24) supporting the baffle plate (25) may be removable.

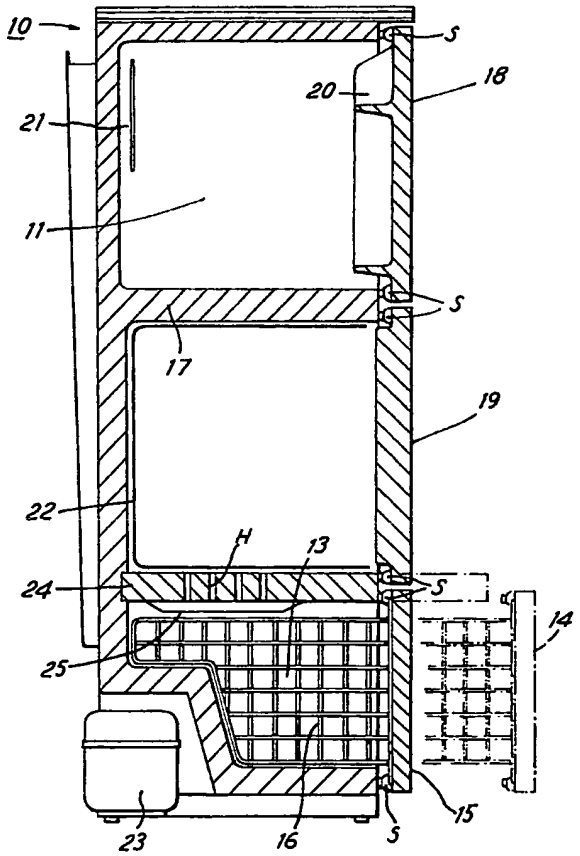

FIG. 2

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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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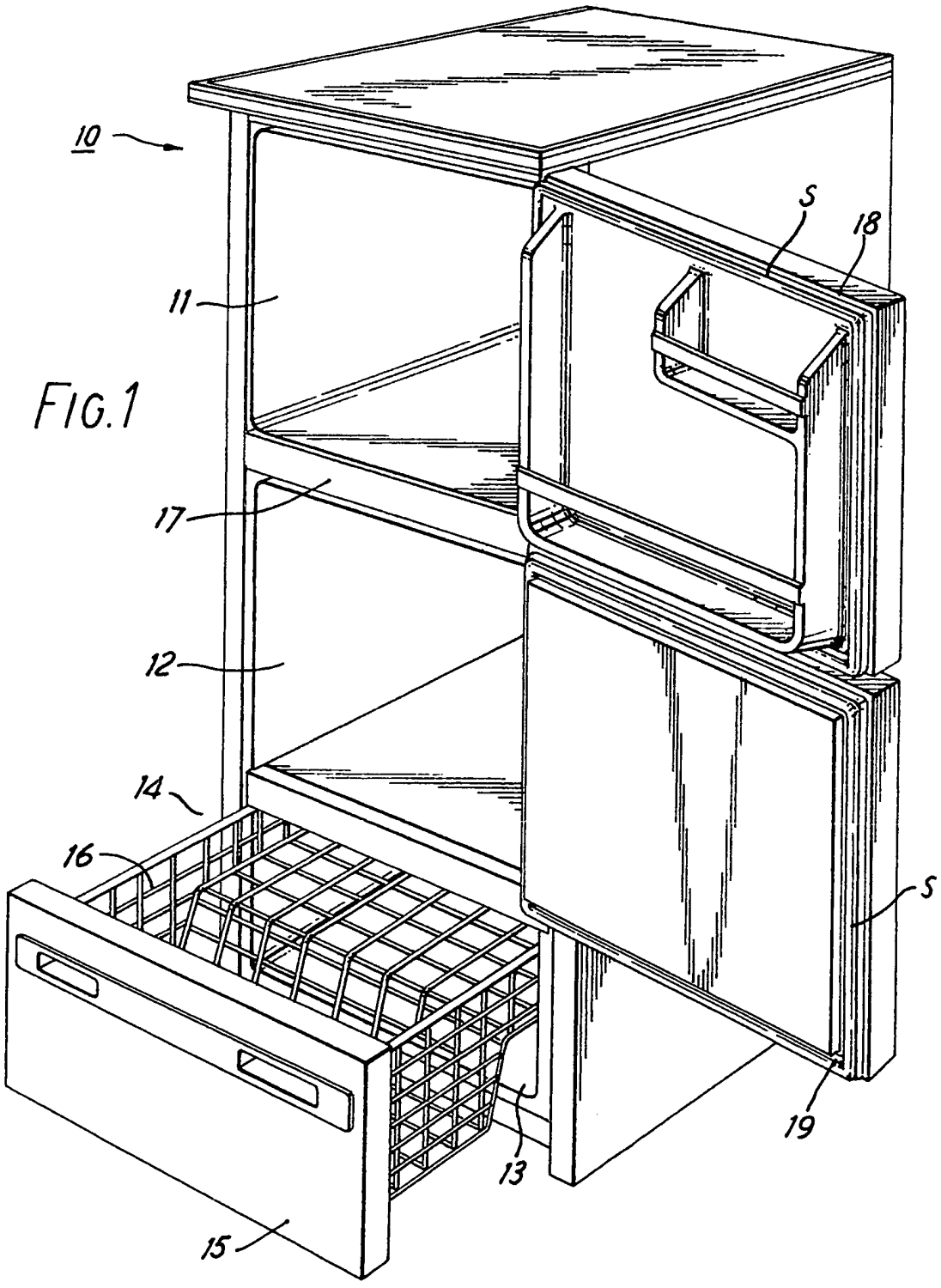

FIG.1

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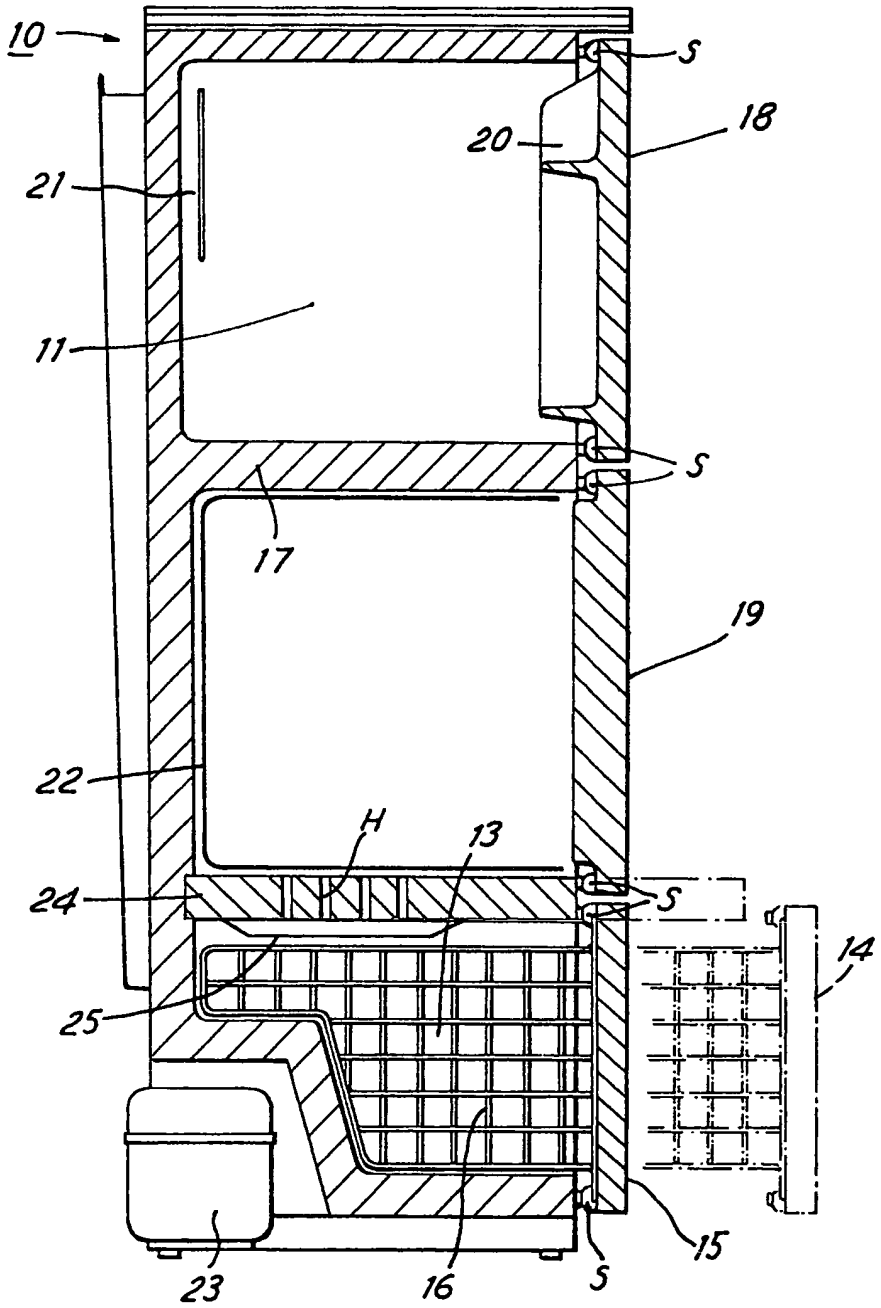

FIG. 2

SPECIFICATION

Improvements in or relating to cold cabinets

This invention relates to cold cabinets, that is to say, cabinets suitable for storing food or other items at temperatures below the ambient temperature.

Cold cabinets are known having two or three compartments, each maintained at a different temperature. Two compartment cabinets typically comprise a freezer compartment, suitable for storing frozen food stuffs, and a refrigerator compartment for short term storage of perishable food stuffs. The three compartment cabinets also include a relatively high temperature storage compartment providing for chilled storage of fruit, vegetables or drinks. Such known cabinets suffer from the disadvantage that the respective operating temperatures of their compartments are fixed so that the cabinet becomes unsuitable should a user's storage requirements change.

It is an object of the present invention to provide an improved form of cold cabinet which is more flexible in its range of uses.

According to the invention there is provided a cold cabinet comprising,

separate freezer and refrigerator compartments, a refrigerator circuit for maintaining the respective compartments at relatively low and high temperatures, and a further compartment, adjacent to the freezer compartment and separated therefrom by a partition member formed of a thermally insulating material, which partition member includes adjustable baffle means for controlling the heat flow between the further and freezer compartments so that in one extreme position of the baffle means the further compartment is maintained at a temperature substantially higher than that of the refrigerator compartment, and in the other extreme position the further compartment is maintained at or substantially below the temperature of the refrigerator compartment.

The partition member may be removable, whereby the further compartment may achieve a temperature at or close to that of the freezer compartment.

In order that the invention may be more readily understood and carried into effect, a particular embodiment thereof is now described, by way of example only, by reference to the accompanying drawings of which,

Figure 1 shows a perspective view of a cold cabinet according to the invention, and

Figure 2 is a sectional side elevation view of the cold cabinet shown in Figure 1.

The cold cabinet is shown generally at 10 and comprises three compartments; namely a refrigerator compartment 11, a freezer compartment 12, and a further compartment 13 which is positioned adjacent to, and in this example directly below, the freezer compartment. Compartment 13 has a drawer 14 comprising a front panel 15 and a basket 16 attached thereto. The drawer may be slidingly withdrawn from the compartment, as indicated by the chain-dotted outline in Figure 2.

Compartments 11 and 12 are separated by a fixed, thermally insulating wall member 17, and have respective hinged, front opening doors, 18 and 19, although alternatively a single common door could be used. As is common in the art, the inner walls of the cabinet and the inner surfaces of the doors and panel are formed of vacuum moulded casing filled with a thermally insulating material such as expanded polystyrene or alternatively polyurethane foam which substantially reduces heat leakage into the compartments from outside. Heat leakage is further reduced by heat seals in the form of rubber or plastics material gaskets (shown at S in Figure 2) which are disposed round the edges of the doors and panel and can engage the corresponding, outwardly facing edges of the cabinet. The inner surface of the refrigerator door is moulded to provide storage spaces, 20, for example, suitable for accommodating bottles and like articles. In this example, the refrigerator, freezer and further compartments have approximate respective volumes of 3, 2.5 and 1.7 cubic feet, although, as will be readily appreciated other values may be chosen to suit a particular requirement.

Cooling is accomplished by evaporators 21 and 22 which are respectively disposed in the refrigerator and freezer compartments and are driven by a single compressor 23. In this example a Danfois FR 10A compressor is used which has a 10 cc/stroke capacity.

As indicated in Figure 2 evaporator 21 has a relatively small surface area and is capable of maintaining a normal refrigerator temperature of between 0°C and 8°C. Evaporator 22 on the other hand, lines substantially the whole of the freezer compartment and maintains a much lower temperature below −18°C (commonly referred to as the 4 star temperature).

A steady temperature selected from the above-mentioned ranges is maintained within each of the compartments by means of one or more thermostats. A solenoid operated valve may be used in addition, to cause the appropriate evaporator to be driven by the compressor.

In accordance with the present invention the actual temperature of the further compartment can be selected from a wide range of possible operating temperatures. Selection is achieved by means of a partition member 24 which may be removable and is supported directly below the freezer compartment in grooves extending along the side and back walls of the cabinet. The partition member is comprised of a plastics casing filled with the thermally insulating material (expanded polystyrene or polyurethane foam) and incorporates a baffle plate 25 which can be adjusted to control the heat transfer between the freezer compartment and the further compartment. The partition member 24 has an array of holes H, which communicate between its upper and lower surfaces and the baffle, plate 25 has an identical array of holes and is held against the lower surface by guide rails (not shown in Figure 2) which permit lateral movement thereof.

In one extreme position of the baffle plate the two sets of holes are in exact register, thereby permitting maximum heat transfer between the two compart-

ments. In this example of the invention, the size and number of holes is such that the further compartment is maintained, in this mode of operation, at or close to the temperature of the refrigerator compartment, i.e. 0° to 8°C, although by increasing the size and/or number of holes lower temperatures may be achieved. In the other extreme position of the baffle plate the holes are completely out of register so that heat transfer between the compartments is minimised. In this condition the further compartment attains a much higher temperature typically in the range 10°C to 12°C and is then suitable for use as a salad drawer, for example. By positioning the baffle plate at an intermediate position any temperature in the range 0° to 12°C may be readily attained.

In another mode of operation the partition member may be removed whereby the further compartment achieves a temperature at or close to that of the freezer compartment, typically in the range −12° to −18°C.

By suitable adjustment of the partition member, therefore, or by its removal the further compartment may be adapted to provide a variety of facilities ranging from an additional freezer compartment to a relatively high temperature salad drawer.

Whilst the above-described embodiment includes a removable partition member it will be understood that the present invention also encompasses alternative embodiments including a fixed partition member having an adjustable baffle means for controlling the temperature within the further compartment. It will also be appreciated that the present invention is not limited to the above-described configuration of compartments, and alternatively, for example, the freezer compartment may be positioned at the top of the cabinet and the refrigerator compartment at the bottom, with the further compartment lying therebetween.

CLAIMS

1. A cold cabinet comprising separate freezer and refrigerator compartments, a refrigerator circuit for maintaining the respective compartments at relatively low and high temperatures and a further compartment, adjacent to the freezer compartment, and separated therefrom by a partition member formed of a thermally insulating material, which partition member includes adjustable baffle means for controlling the heat flow between the further and freezer compartments so that in one extreme position of the baffle means the further compartment is maintained at a temperature substantially higher than that of the refrigerator compartment and in the other extreme position the further compartment is maintained at or substantially below the temperature of the refrigerator compartment.

2. A cold cabinet according to Claim 1 wherein the partition member can be removed whereby the further compartment attains a temperature at or close to that of the freezer compartment.

3. A cold cabinet according to Claims 1 or 2 wherein said baffle means comprises a plate having a set of holes or slots, and the partition member has a complementary set of holes or slots so that when the baffle means assumes said one extreme position the holes or slots are out of register and when the baffle means assumes said other extreme position the holes or slots are in register.

4. A cold cabinet according to Claim 3 wherein when the baffle means assumes said other extreme position the further compartment attains a temperature substantially between 0° and 8°C, and when the baffle means assumes said one extreme position the further compartment attains a temperature substantially between 10° and 12°C.

5. A cold cabinet substantially is hereinbefore described by reference to and as illustrated in the accompanying drawings.

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